Claims

1. A method of loading and unloading loads in the rack storage warehouse comprising a plurality of rack bays (1) and rack aisles (2) located between the bays (1) of racks, comprising the steps

(a) that a load (10) is transported to a face side of a rack bay (1);

(b) that the load (10) is transported at the face side of the rack bay (1) in the vertical direction to a target level;

(c) that the load is transported at the target level in the horizontal direction in the rack aisle;

(d) that the load (10) is transported in the horizontal direction in the rack aisle (2) up to a target location at the respective target level; and

(e) that the load (10) is transported in the horizontal direction from the rack aisle (2) into the rack.

2. The method according to claim 1, characterized in that during the unloading of loads (10), the steps (a) to (e) are carried out accordingly in the reverse order.

3. The method according to any one of claims 1 and 2, characterized in that each change in direction during the transport of the load (10) is carried out at an angle of 90°.

4. A storage system for loading and unloading loads in a rack storage warehouse comprising a plurality of rack bays (1) and rack aisles (2) located between the rack bays (1), in particular for carrying out the method according to any one of claims 1 to 3, characterized in that provision is made in the rack aisles (2) for a plurality of guiding elements (16) associated with individual levels of the bays of racks; that provision is made on the guiding elements (16) for movable transport devices (11) suitable for receiving loads (10); and that provision is made in conjunction with the transport devices (11) for a system for displacing the loads sideways into the racks.

5. The storage system according to claim 4, characterized in that the system for displacing the loads sideways into the racks is formed by a lifting and pushing system (12).

6. The storage system according to any one of claims 4 and 5, characterized in that provision is made at the ends of the rack bays (2) for lifting devices by means of which the loads can be lifted to the guiding elements (16).

7. The storage system according to any one of claims 4 to 6, characterized in that a plurality of rack elements (27) are associated with each level of the rack bays (1); and that the guiding elements (16) are integrated in the rack elements (27).

8. The storage system according to any one of claims 4 to 7, characterized in that the lifting systems and the transport devices can be driven by means of pulling systems.

9. The storage system according to any one of claims 4 to 8, characterized in that provision is made in the rack aisles (2) for two transport devices (11), said transport devices being connected with each other.

10. A transport device for use in a storage system according to any one of claims 4 to 9.

11. The transport device according to claim 10, characterized in that the transport device (11) comprises rollers (18) having a running surface adapted to the shape of the guiding element.

12. A lifting and pushing system for use in a storage system according to any one of claims 4 to 9.

13. The lifting and pushing system according to claim 12, characterized in that in the lower zone, the lifting and pushing system (12) comprises running wheels (2) and a lifting system acting in the upward direction, so that loads can be raised and the force of the weight acts on the floor.

14. The lifting and pushing system according to any one of claims 12 and 13, characterized in that the lifting and pushing system (12) comprises a plurality of lifting bars (24) for raising a lifting component (23), said lifting bars being provided within the range of the running wheels (22).

15. A rack element for use in a storage system according to any one of claims 4 to 9.

16. The rack element according to claim 15, characterized in that the rack element (27) comprises fastening elements (31) for attachment to two bays (1) of racks located next to each other.

17. The rack element according to any one of claims 15 and 16, characterized in that the width of the rack element (27) corresponds with the width of a rack aisle (2) and the width of a rack.

18. The rack element according to any one of claims 15 to 17, characterized in that the rack element (27) comprises an electric current and data ~~carrier~~ rail (20).

19. The rack element according to any one of claims 15 to 18, characterized in that the rack element (27) comprises tubes on which the wheels of the transport devices are capable of running along.

20. The rack element according to any one of claims 15 to 19, characterized in that the rack element (27) comprises at least one revolving chain drive (28) for driving the transport devices.

ADD A3

Add B7

Add C1

Add D7